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| APPLICATION NO.                  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/507,325                       | 09/10/2004  | Hideki Morita        | APA-0216            | 2850             |
| 23353                            | 7590        | 12/26/2007           | EXAMINER            |                  |
| RADER FISHMAN & GRAUER PLLC      |             |                      | LAZORCIK, JASON L   |                  |
| LION BUILDING                    |             |                      |                     |                  |
| 1233 20TH STREET N.W., SUITE 501 |             |                      | ART UNIT            | PAPER NUMBER     |
| WASHINGTON, DC 20036             |             |                      | 1791                |                  |
|                                  |             |                      | MAIL DATE           | DELIVERY MODE    |
|                                  |             |                      | 12/26/2007          | PAPER            |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                   |               |
|------------------------------|-------------------|---------------|
| <b>Office Action Summary</b> | Application No.   | Applicant(s)  |
|                              | 10/507,325        | MORITA ET AL. |
|                              | Examiner          | Art Unit      |
|                              | Jason L. Lazorcik | 1791          |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 15 October 2007.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-5 is/are pending in the application.  
 4a) Of the above claim(s) 5 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-4 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 10 September 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 9/10/2004.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election with traverse of Group I claims 1-4 for continued examination in the reply filed on October 15, 2007 is acknowledged. The traversal is on the ground(s) that;

Both the inventions of Group I and Group II drawn to a method and apparatus for processing brittle material, respectively, present a special technical feature which collectively distinguishes said inventions over the reference to Lee et. al. Specifically, Applicant argues that Lee fails to teach selecting a wavelength of light for processing a brittle material wherein the particular wavelength is selected on the basis of two separate criteria, first that the wavelength is selected based upon the absorbance data for a representative sample of said brittle material and second that the wavelength is selected based upon a calculation which accounts for the thickness of a sample.

In response, it is the Examiners position that the particular limitation which Applicant argues, namely that "a wavelength of light having a preset absorptance is selected, based on an actual absorptance data of a sample of a material that is the same as the brittle material to be processed and also based on a calculated value of absorptance that is calculated using a thickness of a sample", is in no manner explicitly reflected in the pending claims. Applicant is further directed to the lack of clarity and indefiniteness issues raised in the rejection under 35 U.S.C. §112, second paragraph, which serve to further underscore that the instant argument lacks basis in the pending claim language. Therefore, to the extent that Applicant argues that Lee fails to show

limitations which are not reflected in the claim language, said arguments are deemed moot.

Further as evidenced in the rejection of claims under 35 U.S.C. §102(b)/103(a) below, the reference to Smart ( US 6,337,462 B1) teaches essentially every element of applicants claim 1 drawn to the method for processing a brittle material.

It follows that in view of the teachings of Smart, the inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. Further, the inventions claimed in Groups I and II differ by virtue of their subject matter (e.g method vs. apparatus) such that they are not linked to form a single inventive concept.

The restriction requirement is still deemed proper and is therefore made FINAL.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants independent claim 1 suffers from a series of deficiencies relating to lack of antecedent basis and grammatical tense inconsistencies which render the

particular metes and bounds of the claimed process nearly unintelligible. Even after careful review of the claim language, a definitive ordering of events and/or interrelation of claimed elements is not evident. For example;

The wavelength of light for the absorptance of the processed brittle material is selected based on the calculated value of absorptance of the sample, while

The calculated value of absorptance of the sample is calculated based on the set value of absorptance of the brittle material illuminated with light at the selected wavelength

Restated, the selected wavelength of light for illuminating the substrate depends upon the calculated absorptance of light from an illuminated sample, however the calculated value depends upon the selected wavelength value. The ordering of steps in the claimed method and a definitive timeline for their execution is therefore entirely unclear to the Examiner, and one of ordinary skill in the art would not necessarily be apprised of the interrelation of the claim elements.

Claim 1 recites the limitation "the light irradiated onto the brittle material to be processed" in line 4, "the same wavelength as that irradiated on the brittle material" in line 7, "that set value of absorptance" in line 9, "the absorptance of the processed brittle material" in line 11, "that calculated value of absorptance" in line 12. There is insufficient antecedent basis for these limitations in the claim.

In summary, Applicant is strongly advised to amend the claim to address consistency of terms (e.g. antecedent basis issues) as well as issues chronology and tense throughout the claim in order to clarify the interrelationship of claimed elements.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Smart (US 6,337,462 B1).

Smart broadly teaches a system used for heat processing a brittle material by illuminating said brittle material with light of a wavelength which is selected in advance on the basis of selected processing criteria. Specifically, the illumination wavelength is set or selected to be at a wavelength beyond the absorption edge of about 1.1 microns (Column 2, Lines 10-12) in order to minimize thermal processing damage to the substrate. The sample, which is mounted upon a table (34) or, alternately as claimed, upon a "reflective layer" on the rear side of a light irradiating position, is repeatedly advanced into position along "a predetermined line".

As stated above, the particular wavelength of light is pre-selected and this pre-selection is based in part upon the absorbance or "absorptance" data (see Figs 1 and 2)

gathered from a sample of material which is the same as that chosen for processing.

Smart discloses that the selected wavelength of light plays an important role in effectively processing the brittle substrate material without subjecting said brittle material to excessive heating and damage.

It is implicitly understood from the absorbance coefficient plot presented in figure 1 that the sample(s) of material used to generate said plot were irradiated "in sequence" by at least one light source having a plurality of mutually exclusive wavelengths. Should Applicant argue that Smart nowhere explicitly stated that the sample data of figure 1 was acquired using a plurality of different sources having exclusive wavelengths, then it is the Examiners position that one of ordinary skill in the art would have been fully capable of obtaining the sample absorptance data by any conventional means available in the art at the time of the invention.

Restated, the preferred method of acquiring the sample absorptance data is not deemed particularly germane to the method of using said data to select an appropriate irradiation wavelength for the processing of the brittle material. It follows, absent any compelling evidence to the contrary, it would have been just as obvious to acquire individual absorptance datapoints for the sample material using, for example, a plurality of monochromatic sources (lasers) of mutually exclusive wavelengths as it would have been to utilize a single broadband source paired with a monochrometer. At the very least, it would have been obvious for one of ordinary skill in the art to try the plurality of light sources at the time of the invention.

The reference further instructs (Column 5, line 63 – Column 6, line 14) that the chosen wavelength affects the depth to which the incident radiation penetrates the substrate. In this passage, Smart lays out the particular relationship between illumination depth, material absorbance, and wavelength which would have represented a significant concern to processing the buried features of particular concern in the reference (Column 8, lines 15-48). Further, Smart teaches that a minor change in the illumination wavelength results in a drastic change in absorption efficiency.

It follows from the foregoing that Smart teaches selecting a wavelength for illuminating the brittle material upon 1) a set value of absorptance and based at least in part upon 2) actual sample absorptance data (e.g. Fig 1) while accounting for the 3) substrate thickness and heating efficiency.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lapham (US 4,399,345) teaches selective processing of brittle substrates by optimization and tuning of the irradiation wavelength and is understood to apply under 35 U.S.C. 102(b)/103(a) according to similar arguments presented above for the Smart (US 6,337,462 B1) reference. Leong et. al. (US 5,611,946) present a multi-wavelength laser cutter system for processing brittle substrates similar to Smart and Lephram. Any reply to the instant Official Action should carefully consider the scope and content of each of these disclosures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL



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